Commonwealth of Kentucky
Division for Air Quality

REVISED PERMIT STATEMENT OF BASIS

(FINAL)
Title V, Operating
Permit: V-08-021
Louisville Gas and Electric Company, Magnolia Station
Louisville, KY 40232
November 3, 2008
Chris Walling, Reviewer

SOURCE ID:	21-123-00012
AGENCY INTEREST:	38839
ACTIVITY:	APE 20080001

SOURCE DESCRIPTION:

On June 10, 2008, Louisville Gas and Electric submitted a Title V renewal application to the Division for their existing natural gas compression, storage, processing and distribution facility in Magnolia, Kentucky. The pipeline-quality natural gas is stored in geological formations underground and then pumped out to be re-distributed during peak demand in winter months. Underground storage causes hydrogen sulfide (H2S) contamination due to bacterial action. Hence, H2S is removed with an amine sweetening process prior to re-distribution. There is an ethylene glycol dehydration unit and boilers to support both the sweetening and the dehydration processes. In addition, the source has six natural-gas fired compressor engines to compress the gas back into the distribution networks. The 10 MMBtu/hr, 8.4 MMBtu/hr and 1.0 MMBtu/hr units which were subject to applicable standards but were previously permitted as insignificant units under Section C have been moved to Section B of the permit.

The source is permitted for continuous operation, 8760 hours per year, although the facility historically only operates approximately one fourth of every year, the winter months. Currently, there are four emissions units, two control measures (an afterburner for the sweetening process and a BTEX flare for the de-watering process). The afterburner on the natural gas purification plants, converts H2S to sulfur dioxide (SO_2) at an efficiency rate of 98%. Formaldehyde emissions are generated from the natural gas compressor units, however the risk analysis performed by the Division indicates that there will be no adverse effects and they satisfy the requirements of 401 KAR 63:020. The source is not subject to the new source performance standards (NSPS) or the Maximum Achievable Control Technology (MACT) due to the dates of installation and operation. Emissions factors are taken from AP-42 and a mass balance performed by the source.

APPLICABLE REGULATIONS

401 KAR 61:015, Existing indirect heat exchangers, applicable to an emissions unit with a capacity of less than 250 MMBtu/hr, which commenced before April 9, 1972.

401 KAR 63:020, Potentially Hazardous Matter or Toxic Substances

NON-APPLICABLE REGULATIONS

40 CFR 60 JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. The provisions of this subpart are not applicable to engines with a maximum engine power

greater than 500 hp manufactured before July 1, 2007.

40 CFR 60 LLL, Standards of Performance for Onshore Natural Gas Processing: SO_2 Emissions. The provisions of this subpart apply to each affected facility identified in paragraph (a) of this section which commences construction or modification after January 20, 1984. This facility predates 1984.

40 CFR 63 ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. A spark ignition 2-stroke stationary RICE constructed before December 19, 2002, does not have to meet the requirements of this subpart.

SIGNIGFICANT EMISSION UNITS:

Emission Unit 01 (03)	**Two Natural Gas Purification Plants both controlled by a single Hydrogen Sulfide (H2S) Afterburner; Combusting H2S from purifiers produces SO2.** Purification Plant #1: Constructed on or before 1960 Purification Plant #2: Constructed on or before 1965 6.56 MMBtu/hr fuel usage for combustion 86,700 MMBtu/day process gas max flow rate Flare Industries DU-O6 Utility Flare Tip: Installed 1997

Pursuant to 401 KAR 63:020, persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. No owner or operator shall allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Evaluation of such facilities as to adequacy of controls and/or procedures and emission potential will be made on an individual basis by the Cabinet.

Pursuant to 401 KAR 52:020 Section 26, the permittee shall monitor and maintain the records of the amounts of natural gas processed and H2S concentration on a monthly basis.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall perform a qualitative visual observation of the opacity emissions from the stack on a weekly basis and maintain a log of the observations. If visible emissions from the stack are seen, then the opacity shall be determined by EPA Reference Method 9 and if the opacity reading is greater than 20 percent, then the permittee must initiate an inspection of the equipment for any repairs.

Emission Unit 03 (07, 08, 11)	**Three Natural Gas-Fired Compressor Units Which Compress Natural Gas for the Distribution Field** Two-cycle lean burn reciprocating internal combustion engines Burning 10.4MMBtu/hr, each Constructed on or before 1964

Pursuant to 401 KAR 63:020, persons responsible for a source from which hazardous matter or toxic

substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. No owner or operator shall allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Evaluation of such facilities as to adequacy of controls and/or procedures and emission potential will be made on an individual basis by the Cabinet.

Pursuant to 401 KAR 52:040 Section 23, the permittee shall monitor and maintain records of the monthly operating hours for each engine and total them in any consecutive twelve (12)months.

Emission Unit 04 (09, 10, 12) **Three Natural Gas-Fired Compressor Units Which Compress Natural Gas for the Distribution Field**

Four-cycle rich burn reciprocating internal combustion engines
Burning 10.56 MMBtu/hr, each
Constructed on or before 1972

Pursuant to 401 KAR 63:020, persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. No owner or operator shall allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Evaluation of such facilities as to adequacy of controls and/or procedures and emission potential will be made on an individual basis by the Cabinet.

Pursuant to 401 KAR 52:040 Section 23, the permittee shall monitor and maintain records of the monthly operating hours for each engine and total them in any consecutive twelve (12)months

Emission Unit 05 **Two Natural Gas-fired Boilers for Sulfur Purification Plants #1 and #2**

#1: 8.4 MMBtu/hr
#2: 10 MMBtu/hr
Both units installed before 1970

Emission Unit 06 **Two Natural Gas-fired Boilers For glycol dehydration (04, 05)**

Rated capacity of 1 MMBtu/hr, each
Installed date: Before 1970

Pursuant to 401 KAR 61:015, Section 4(1), particulate matter emissions from each emission unit shall not exceed 0.75 lb/MMBtu, based on a 3-hour average.

Pursuant to 401 KAR 61:015, Section 4(3), visible emissions shall not exceed forty (40) percent opacity from each emission unit except:

Emissions from an indirect heat exchanger during building a new fire for the period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer’s recommendations.

Pursuant to 401 KAR 61:015, Section 5(1), emissions of sulfur dioxide from each emission unit shall not exceed 6.0lb/MMBtu, based on a 24-hour average.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.